

ENGAGING STUDENTS THROUGH CLASSROOM CONNECTION WEBINARS TO IMPROVE THEIR UNDERSTANDING OF THE MARS SCIENCE LABORATORY MISSION. P.V. Graff¹, C. Achilles¹,
¹Jacobs Technology ESCG/NASA Johnson Space Center, Houston, TX, 77058, (paige.v.graff@nasa.gov).

Introduction: Planetary exploration missions to other worlds, like Mars, can generate a lot of excitement and wonder for the public. The Mars Science Laboratory Mission is one of the latest planetary missions that has intrigued the public perhaps more than most. How can scientists and educational specialists capitalize on the allure of this mission and involve students and teachers in a way that not only shares the story of the mission, but actively engages classrooms with scientists and improves their understanding of the science? The Expedition Earth and Beyond (EEAB) Program [1], facilitated by the Astromaterials Research and Exploration Science (ARES) Directorate Education Program at the NASA Johnson Space Center achieves this by facilitating MSL mission focused classroom connection webinars. Five MSL-focused webinars facilitated through EEAB during the 2012 fall semester engaged almost 3000 students and teachers. Involved STEM experts/role models helped translate the science behind the Mars Science Laboratory mission in a comprehensive, exciting, and engaging manner. These virtual events captured participants attention while increasing their science awareness and understanding of the MSL mission.

Expedition Earth and Beyond (EEAB): This Earth and planetary science education program is designed to inspire, engage, and educate teachers and students by getting them actively involved with NASA exploration, discovery, and the process of science. The program provides a structure for students in grades 5-12 to conduct authentic research about Earth and/or other planetary bodies. It also provides the opportunity for students to interact with scientists and STEM experts through classroom connection webinars.

Classroom Connection Webinars: These online distance learning events are facilitated through the use of WebEx. WebEx is a tool that connects numerous participants using a web-based interface. Technical requirements are minimal -- an internet-connected computer and a speaker phone. As an alternative to a speakerphone, participants have also utilized SKYPE or Google Voice. WebEx can easily connect distributed participants and allow them to be actively engaged as they interact with the presenter during webinars. Expedition Earth and Beyond classroom connection webinars generally focus on a broad range of topics such as remote sensing, comparative planetology, and/or planetary exploration. Each session begins with an event overview including the goals of the session

and how the session addresses educational standards. This is followed by a presenter introduction and an interactive presentation. The interactive nature of the presentation enables event facilitators to ask students questions to gain insight into their prior knowledge, to gauge their understanding, and to help keep students engaged. Acknowledgement of student responses helps motivate and provide positive reinforcement to participants. At the end of each 1-hour session there is time allotted for students to ask questions. For those interested, an optional extended question and answer session is provided.

MSL Focused Classroom Connection Webinars: During the fall of 2012, the Expedition Earth and Beyond classroom connection webinars focused on the Mars Science Laboratory mission. These events connected students in grades 1 through 12 with a participating MSL scientist from the Astromaterials Research and Exploration Science (ARES) Directorate who spent the initial three months of the mission at the Jet Propulsion Laboratory (JPL) in Pasadena, California. Webex enabled these webinars to easily connect the scientist at JPL, the educational specialist/event coordinator at the NASA Johnson Space Center, and numerous classrooms from rural, urban, and suburban locations across the nation. To ensure these events captured the attention of the audience, presentations utilized a variety of engaging media. This included stunning mission imagery, exciting video clips, the use of the Explore Mars: Curiosity Beta interactive website [2], interactive slides, and extensive time for participant questions.

These webinars were designed to share the story and improve understanding of the MSL mission while actively engaging students in classrooms across the nation. These theme of each webinar was designed to build the excitement from the thrill and suspense of the anticipated landing, to Curiosity's landing success to the rover's continued journey. As these webinars were available to classrooms across different times zones, sessions were offered on different days and different times in order to accommodate the interest and availability of participants. A total of five webinars were facilitated during the semester, reaching close to 3000 students and teachers in over 24 states. Post-surveys about the event indicated an overwhelmingly positive response to the webinars. Survey comments included: *"We thoroughly enjoyed this experience. The opportunity to engage with a real scientist working in such a thrilling capacity is immeasurable."*; *"What*

made this presentation particularly effective was the interactive nature of it. The moderator did an excellent job of making the students feel connected with the scientist and thereby with the science.”; “The students loved the fact that their questions were being answered and shared with other schools.”; “The students loved being able to answer the questions and ranted and raved about what a ‘cool job’ Cherie has.” Overall feedback from participants indicated that these events are exciting, inspiring, motivating, and extremely valuable experiences. Students and teachers continue to ask for more webinars.

Conclusions: The excitement of planetary exploration missions will continue for years to come. The Expedition Earth and Beyond Program has capitalized on the excitement generated by the MSL mission and the involvement of ARES scientists to help engage students through classroom connection webinars. These webinars have helped improve the understanding of this mission by sharing the story, the science, and the excitement in a comprehensive and engaging fashion. As NASA continues to explore Mars as well as other planetary worlds, it is essential to make sure the public feels connected and understands the science behind these missions. If the MSL-focused webinars are indicative of student and teacher interest, by continuing to facilitate these types of webinars focusing on MSL and/or other future exploration, the end result will be citizens with an increased science awareness, increase science literacy, increased understanding, and increased interest in exploration.

References: [1] *Expedition Earth and Beyond*, <http://ares.jsc.nasa.gov/ares/eeab/index.cfm>, [2] *Explore Mars :Curiosity Beta*, <http://mars.jpl.nasa.gov/explore/curiosity>.

Additional Information: For additional information on Expedition Earth and Beyond, contact Paige Valderrama Graff, the PI of the project at paige.v.graff@nasa.gov.